

REMARKS

Claims 1-14 are pending in this application. Claim 13 has been allowed and claims 4 and 11 have been objected to as being dependent upon rejected base claims. Claims 1-3, 5-10 and 12 have been rejected. Claim 8 has been cancelled, claim 14 has been added, and claims 1-7 and 9 have been amended. Claims 1, 2, 10, 12 and 13 are independent.

The Examiner is thanked for the allowance of claim 13, and the indicated allowability of claims 4 and 11. As explained below, those claims have not been placed into independent form because claim 1, from which they both depend, itself is believed to be patentable.

Support for new claim 14 can be found throughout the application as filed, for example, Fig. 5, and page 24, line 1, through page 25, line 19. In particular, page 25, lines 7-10, states that the Mono pumps 326A-C (which it is noted are present in the ink supply and ink recovery lines) can be operated to transfer the ink before and during printing and also to remove and/or recover the ink and water after printing.

The Objection to the Claims

Claims 4 and 7 have been objected to on grounds the claim feature "said diluting liquid supply means" lacked antecedent bases. The Examiner helpfully noted that this objection would be overcome if claims 4 and 7 were revised to both depend from claim 3.

Claims 4 and 7 have both been amended to depend from claim 3. Since claim 3 positively recites "at least one diluting liquid supply means", the claim features in question now have a proper antecedent basis.

Accordingly, favorable reconsideration and withdrawal of this objection are respectfully requested.

**The Rejections Under
35 U.S.C. § 102**

Claims 1, 3, 7/3, 8 and 10 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,003,877 to Yano et al. Applicant respectfully traverses this rejection and submits the following arguments in support thereof.

As described in claim 1, this invention involves a printing machine having an ink reservoir, an ink supply source and at least one ink delivery path connecting the ink reservoir to the ink supply source so that ink from the ink supply source can be supplied via the ink delivery path to the ink reservoir and accumulated therein for printing. At least one mechanism removes ink remaining in the ink delivery path, and this mechanism includes an air supply which supplies air to the ink delivery path with at least one of a flow rate and a flow volume sufficiently large enough so that the air flows toward the ink supply source in a direction away from the ink reservoir and so removes ink remaining on the inner surface of the ink delivery . The ink delivery path includes at least one ink supply tubing for supplying ink from the ink supply source to the ink reservoir, and at least one ink recovery tubing for recovering ink from the ink reservoir and returning it to the ink supply source. Each of the at least one ink supply tubing and the at least one ink recovery tubing includes an ink transfer mechanism that transfers ink between the ink reservoir and the ink supply source in one direction and another direction opposite to that one direction, and the air supply. At least one of the ink supply tubing serves as an ink recovery tubing and the ink recovery tubing serves as an ink supply tubing.

According to claim 10, this invention concerns a method for supplying/recovering ink. The ink is supplied and/or recovered via at least one ink delivery tubing connected between an ink reservoir and an ink supply source. To do this air is supplied with a fast enough flow rate and/or strong enough flow volume into the ink delivery tubing so that the air flows toward the ink supply source in the direction away from the ink reservoir. Diluting liquid is supplied in the ink delivery tubings intermittently such that the liquid flows toward the ink supply source from the ink reservoir. Both of the supplying steps occur simultaneously in order to recover the ink remaining on the inner surface of the ink delivery tubings.

This rejection is traversed on grounds the Office Action mischaracterizes Yano. Specifically, the Office Action states that "[t]he printing machine of Yano et al further includes one or more ink removing means 4-6 for removing the ink remaining in the ink delivery tubings. Each of the ink removing means includes respective air supply means (pump 4) that supply a sufficient air flow into the ink delivery tubing after the ink in the reservoir being sucked back into the ink supply source...." This statement by the Office Action is wrong, however, because Yano's pump 4 only moves ink and washing liquid, not air. Yano specifically defines pump 4 at col. 3, lines 65-68, as follows:

an ink recovering device including a recovering pump 4 for recovering excess quantities of a flexo ink 18 supplied to the nip segment 2 located between the dams 3 and 3

This pump is only described as operating on flexo ink or water, not air (see col. 5, line 29, through col. 6, line 10). Nowhere is there even a suggestion that pump 4 could drive air, much less do so in the manner now claimed. In particular, Yano does not even suggest that air be provided from the air supply means into the ink delivery tubings with at least one of a

flow rate and a flow volume sufficiently large enough so that the air flows toward the ink supply source in a direction away from the ink reservoir and so removes ink remaining on an inner surface of the ink delivery tubing. Nor does elements 5 or 6 remedy this shortcoming - elements 5, 5', 6 and 6' are suction ports and recovering ducts, not pumps(col. 3, line 68, through col. 4, line 3). So Yano does not even suggest an air supply means, much less an air supply means as claimed.

Also, Yano does not suggest that the ink supply tubing can both supply and recover ink, as provided for in claim 1.

As well, Yano fails to suggest the features of claim 10 providing for (1) supply air and (2) supplying diluting liquid in the ink delivery tubings intermittently such that the liquid flows toward the ink supply source from the ink reservoir, with both of these supplying steps occurring simultaneously to recover the ink remaining on the inner surface of the ink delivery tubings.

It is well accepted that a reference which does not identically disclose all the features of a claimed invention cannot anticipate that invention. As just explained, Yano fails even to suggest the features of this invention providing for an air supply, much less an air supply operating as claimed, or supplying diluting liquid and the air simultaneously to recover ink on the inside of ink delivery tubings. Accordingly, Yano in no way anticipates this invention.

The remaining rejected claims, claims 3, 7/3 and 8, all ultimately depend from and so incorporate by reference all the features of claim 1, including those features which have just been shown to patentably distinguish over Yano. These claims therefore are patentable over Yano at least for the same reasons as claim 1.

For all the foregoing reasons, favorable reconsideration and withdrawal of this rejection are respectfully requested.

Claim 12 has been rejected under 35 U.S.C. § 102(b) as being anticipated by Japanese Laid-Open Patent Appln. No. 9-234852 to Umetani al. Applicant respectfully traverses this rejection and submits the following arguments in support thereof.

As set out in claim 12, this invention involves an apparatus for removing and/or recovering ink remaining in one or more ink delivery tubings connecting an ink reservoir to an ink supply source. The apparatus has an air supply means which supplies air into the ink delivery tubings at a fast enough flow rate and/or strong enough flow volume so that the air flows toward the ink supply source in the direction away from the ink reservoir in order to remove ink remaining on the inner surface of the ink delivery tubings.

Applicant submits herewith a machine English translation of Umetani (this translation is available at the Japanese Patent Office website), this translation having been formally cited by the accompanying Information Disclosure Statement.

Umetani merely teaches that pressure can be used to expel ink from, or draw ink into, a tank 3 that is disposed within a sealed container 2 (Fig. 2; ¶ 10 of translation). This is accomplished by providing a pressurizing or pressure reducing device 5 having a compressor 42 and a series of valves 401, 402, 403, 404, 405 and an ejector 406 can be used to create suction that will draw liquid from nozzle 64 into the liquid tank 3 (Figs. 2, 6; ¶¶ 25-28 and 30-31 of translation).

However, with regard to the removal of ink between the rollers 1 and 11, Umetani only teaches that this arrangement is used to draw the ink up from the pool. Nowhere does Umetani even suggest that ink is cleared from the tubings used to supply ink to or recover

ink from the pool. So Umetani in no way suggests the aspects of claim 12 providing for an air supply means that supplies air into the ink delivery tubings at a flow rate and/or flow volume sufficient to cause air to flow toward the ink supply source in the direction away from the ink reservoir to remove ink remaining on the inner surface of the ink delivery tubings.

It is well accepted that a reference which does not identically disclose all the features of a claimed invention cannot anticipate that invention. As just explained, Umetani fails even to the feature of the present invention relating to the clearing of ink from the ink delivery tubings. Accordingly, Umetani in no way anticipates this invention.

For all the foregoing reasons, favorable reconsideration and withdrawal of this rejection are respectfully requested.

The Rejections Under
35 U.S.C. § 103

Claims 2, 5, 6/1 and 9 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Yano in view of Umetani. Applicant respectfully traverses this rejection and submits the following arguments in support thereof.

Claim 2 provides for a printing machine with an ink reservoir, ink supply source, at least one ink delivery path connecting the ink reservoir and the ink supply source so that ink from the ink supply source can be supplied via the ink delivery path to the ink reservoir and accumulated therein for printing, and an air supply which supplies air into the ink delivery path with at least one of a flow rate and a flow volume sufficiently large enough so that the air flows toward the ink supply source in a direction away from the ink reservoir and so removes ink remaining on an inner surface of the ink delivery path. The air supply transfers ink between the ink reservoir and ink supply source via the ink delivery path at least one of (a) before and (b)

during the printing operation, while the air supply removes ink remaining in the delivery path after the printing operation.

The remaining rejected claims all ultimately depend from, and so incorporate by reference all the features of claims 1 or 2, including those features already shown to patentably distinguish over Yano.

As previously pointed out, Yano does not even suggest an air supply means, much less an air supply means as claimed.

Thus, as noted above, the Office Action's interpretation of Yano is correct. In particular, the Office Action is wrong insofar as it suggests Yano has an air supply means in the form of pump 4. Again, it should be noted that Yano's pump 4 only moves ink and washing liquid, not air (see Yano at col. 3, lines 65-68 and col. 5, line 29, through col. 6, line 10). Nowhere does Yano even suggest that pump 4 could drive air, much less provide air from the air supply means to the ink delivery tubings with a flow rate and/or flow volume sufficient so that air flows toward the ink supply source in a direction away from the ink reservoir and to remove ink remaining on an inner surface of the ink delivery tubing.

Also, Yano does not suggest that the ink supply tubing can both supply and recover ink, as provided for in claim 1.

Umetani fails to remedy Yano's shortcomings. As noted above, Umetani merely teaches the use of a pump and ejector to create suction that draws ink from the ink pool back to the ink source. However, Umetani does not suggest providing an air supply means as claimed, in which the flow rate and/or flow volume of the air is sufficient so that ink on the inner surface of the ink delivery tubing is removed.

Umetani therefore suffers from the same deficiencies as Yano, and so the claimed invention patentably distinguishes over the combination of these references.

Accordingly, the claims patentably distinguish over the cited references. Favorable reconsideration and withdrawal of this rejection are respectfully requested.

Miscellaneous

Among the references identified in the accompanying Information Disclosure Statement are three references that were applied during prosecution of a counterpart Japanese patent application, namely, Japanese Utility Model Laid-Open Publn. No. SHO60-154132, Japanese Patent Laid-Open Publn. No. HEI11-34302 and Japanese Utility Model Publn. No. 3053666. In the interests of expediting prosecution, Applicants will now point out how the present invention patentably distinguishes over those references.

JP 60-154132 discloses a printer including a high pressure air jet tube 40 as shown in Fig. 2 corresponding to the air supply of the present invention. The specification states that "thus a negative pressure is generated in the upstream portion of the tubing system 30. Therefore, the ink adhering on the tubing system 30 is positively recovered into the ink reservoir 14 under the suction effect." (page 3, lines 22 to 25).

However, as shown in Fig. 2, in a tubing system 30 which recovers ink from the ink reservoir to the ink supply source, while a high pressure air jet tube 40 is provided an ink transferring means is not. On the other hand, in tubing system 26 which supplies ink from the ink supply source to the ink reservoir, a feeding pump 42 is provided, but an air supply means is not.

JP 11-34302 discloses a printer including an injection nozzle 18 at one end of a recovery tube 1 which jets a mixed liquid consisting of a washing liquid 3 and a pressurized air 16, as shown in Fig. 1. The specification states "[t]he mixed fluid injected from the injection nozzle into the collection pipe 1 in the form of a high-pressure mist repeatedly collides with an inner wall surface of the collection pipe 1 to clean /remove an ink 5 attached/ accumulated on the wall surface." (page 8, ¶ [0017]). However, like JP 60-154132, in a recovery tube 1, the injection nozzle 18 corresponding to the air supply of the present invention is provided but an ink transferring means is not provided. Conversely, in supply tube 6, a feeding pump 4 is provided, but an air supply is not provided.

Accordingly, both JP 60-154132 and JP 11-34302 disclose that ink remaining on the inner surface of the tube is removed by utilizing air stream, but they neither disclose nor suggest that the air supply and the ink transferring means are provided for the ink recovery tube and the ink supply tube, respectively, in the ink path connecting between the ink reservoir and the ink supply source.

Japanese Utility Model Publn. No. 3053666 discloses a printer which prints paperboard sheets by circulating ink between the ink reservoir and the ink supply source via the ink tube, but the air supply is not suggested.

It is submitted that the present invention patentably distinguishes over these references.

CONCLUSION

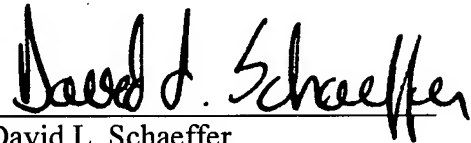
Applicant respectfully submits that all outstanding objections and rejections have been addressed and are now either overcome or moot. Applicant further submits that all

claims pending in this application are patentable over the prior art. Accordingly, favorable consideration and prompt allowance of this application are respectfully requested.

Other than the extension fee authorized in the accompanying Petition for Extension of Time Under 37 C.F.R. 1.136(a) and the additional claim fee authorized in the accompanying Fee Transmittal form, no fees are believed to be due. Nevertheless, should the Commissioner deem any fee(s) to be now or hereafter due in connection with this application, authority is given to charge all such fees to Deposit Account No. 19-4709.

In the event that there are any questions, or should additional information be required, please contact Applicant's attorney at the number listed below.

Respectfully submitted,

A handwritten signature in black ink, reading "David L. Schaeffer". The signature is written in a cursive style with a horizontal line underneath the name.

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